

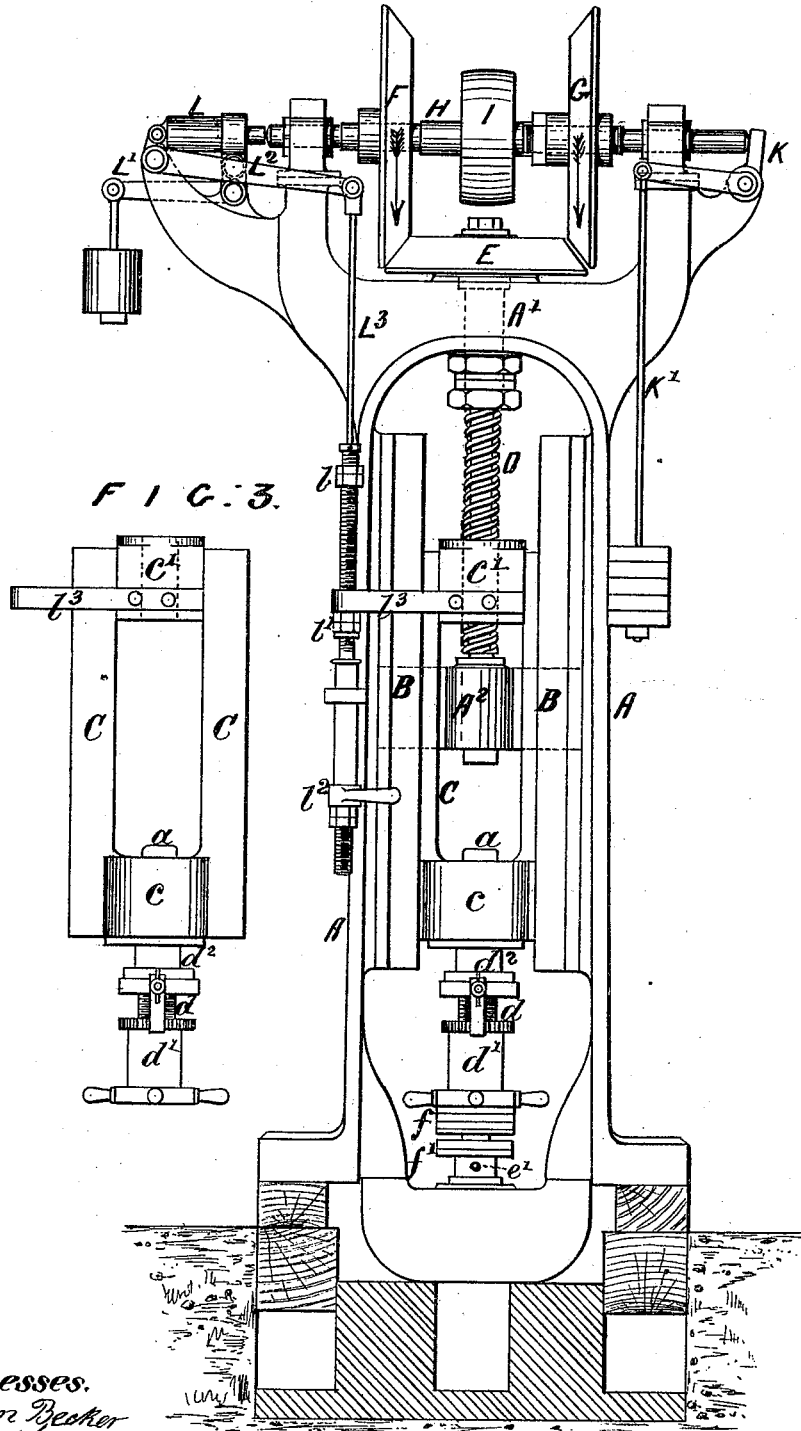
J. A. LeBLANC & A. J. VINCENT.

MACHINES FOR MAKING BOLTS, RIVETS, &c.

No. 181,453.

Patented Aug. 22, 1876.

FIG. 1.



Witnesses.  
 John Bester  
 Edw. Haines

J. A. LeBlanc  
 A. J. Vincent } Brown & Allen  
 by their attorneys

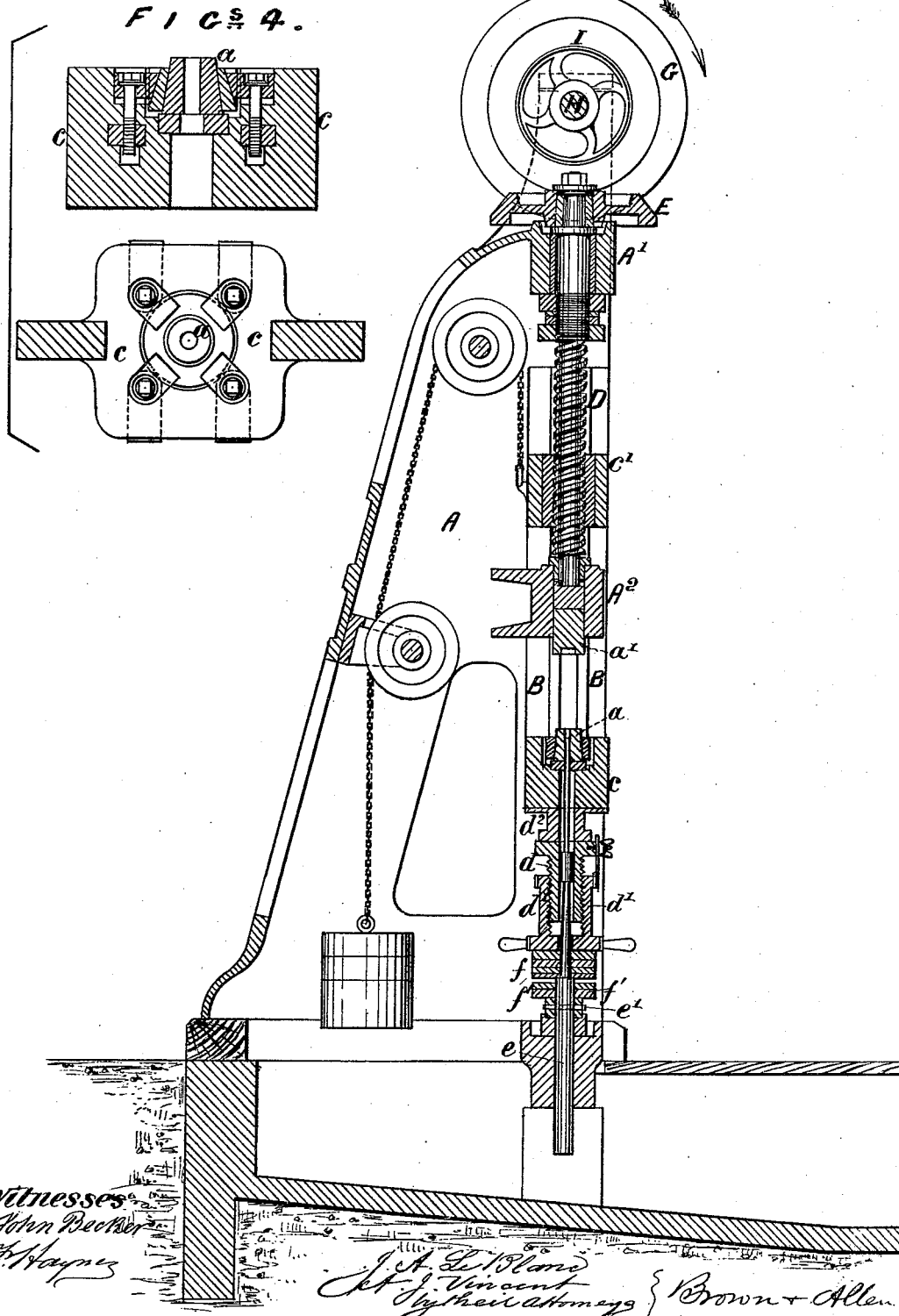
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FIG. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

JULES A. LE BLANC AND AUGUSTE J. VINCENT, OF PARIS, FRANCE,  
ASSIGNORS TO GEORGE GREENWOOD, OF LEEDS, ENGLAND.

## IMPROVEMENT IN MACHINES FOR MAKING BOLTS, RIVETS, &c.

Specification forming part of Letters Patent No. 181,453, dated August 22, 1876; application filed  
June 9, 1876.

*To all whom it may concern:*

Be it known that we, JULES ARMAND LE BLANC and AUGUSTE JEAN VINCENT, both of Paris, France, mechanical engineers, have invented certain Improvements in Machinery for the Manufacture of Rivets, Bolts, and other metallic articles produced by stamping, of which the following is a specification:

This invention relates to a novel arrangement of screw-press, which is intended to supersede the use of the well-known fly-press in stamping or shaping metals.

Figure 1 shows the machine in front elevation, and Fig. 2 in central vertical section, as fitted with dies suitable for forming the heads of bolts; but these dies may be readily replaced by stamping-dies of other shapes suited to the work required to be performed.

A is a cast-iron framing, fitted with vertical guides B, between which works a sliding frame, C. (Shown detached at Fig. 3.) This framing has two cross-pieces, *c c'*, the former of which carries the lower die *a*, which, with the frame C, has a vertical reciprocating motion, while the upper cross-piece *c'* is threaded to receive the screw D for moving the frame C in its guides, which screw depends from the cross-head A<sup>1</sup> of the framing A, it being provided with a collar or shoulder for that purpose. The lower end of the screw D rests in a foot-step carried by a cross-piece, A<sup>2</sup>, of the main framing, and it is in this cross-piece that the stationary heading-die *a'* is fixed.

For the purpose of centering the reciprocating die *a*, it is fitted into a circular die-holder, as shown in the enlarged sectional view, Fig. 4. On the perimeter of this die-holder inclined radial slots are formed to receive wedge-blocks, which fit into the cross-piece *c*. Through these wedge-blocks are passed screw-bolts, the lower ends of which receive nuts, that enter slots formed in the cross-piece *c*. By tightening up these bolts the die-holder will be held firmly in place, and at the same time adjusted laterally, the amount of adjustment being determined by the action of the wedges upon the die-holder. Attached to the under side of the cross-piece *c* are tubular pieces *d d'*, which serve to carry a loose plunger, *d*<sup>2</sup>, which may be adjustable, and the

upper end of which enters the die *a*, and serves to close it at the bottom. The tube *d* is threaded to receive the tubular piece *d'*, which has an opening at bottom for the purpose to be presently explained, and is furnished with handles for turning it to adjust the elevation of the plunger *d*<sup>2</sup>, which rests upon the bottom of the tube *d'*. Immediately below this loose plunger is a fixed pin, *e*, which stands up from the bed of the press, and is supported in its position by a steel cross-pin, *e'*. This vertical pin *e* is intended to enter the adjustable tube *d'* as the frame C descends, and, by intercepting the downward motion of the loose plunger *d*<sup>2</sup>, to thrust out the headed bolt from the movable die. The pin *e* serves also to carry elastic india-rubber washers *ff'*, which will receive the blow of the descending frame C. Should, however, this frame come down with undue force, the pressure on the elastic washers will be received by the pin *e*, and in the event of this force being sufficient to strain the press, the ends of cross-pin *e'*, which supports the pin *e*, will be cut off, and thus prevent any damage occurring to the machinery.

The screw D, which gives the traversing motion to the slide *c*, carrying the die *a*, has keyed to its upper end a beveled friction-wheel, E. This wheel E is driven alternately in opposite directions by means of bevel friction-wheels F and G, keyed to the same horizontal shaft H. The shaft H turns in bearings in the upper end of the frame A, and is free to receive a slight endwise motion in its bearings, to bring either of the wheels F or G into action, as desired. Keyed to the shaft H, midway between the wheels F and G, is a band-pulley, I, for communicating, through a belt, from any prime mover, rotary motion to the friction-wheels. The lateral shifting of these wheels into and out of position is effected by means of counterweighted levers, which bear upon the opposite ends of the shaft H.

K is a crank-lever, jointed to a bracket on the main framing A, and weighted by a rod, K', pendent from its longer arm. The shorter arm of this crank-lever bears against the end of the shaft H, and has a tendency to thrust the wheel G into contact with the friction-wheel E. A counteracting force is, however,

applied to the opposite end of the shaft H by means of a pressing-piece, L, which is arranged in line with the shaft, and is connected, by two short links, to rock-shafts mounted on a bracket of the main framing. Keyed to one of these rock-shafts is a weighted arm, L<sup>1</sup>, which serves to hold back the pressing-piece L from the shaft H; and keyed to the end of the other rock-shaft is an arm, L<sup>2</sup>, to the free end of which is jointed a pendent rod, L<sup>3</sup>, for giving the pressing-piece an opposite tendency. This pendent rod L<sup>3</sup> slides in a guide projecting from the main framing A, and it is provided with two stops, l l', which may be adjustable, and also a handle, l<sup>2</sup>. Between these stops is an arm, l<sup>3</sup>, which projects from the sliding frame C, and embraces the rod L<sup>3</sup>, but so as to allow free play between them.

The action of the mechanism will be as follows: Supposing the lower die *a* to be in the position shown in the drawings, the attendant places a heated bolt-blank therein, and then, by pressing on the handle l<sup>2</sup>, draws down the lever L<sup>2</sup>, and through the pressing-piece L moves the shaft H endwise, and presses the friction-wheel F into contact with the wheel E. Rotary motion being communicated to the shaft H in the direction of the arrow, Fig. 2, the wheel E, with its screw D, will be rotated in a direction that will raise the sliding frame C rapidly and bring the bolt-blank into contact with the fixed heading-die *a'*. So soon as this takes place the arm l<sup>3</sup> will (supposing the stop l to have been properly adjusted) strike against that stop, lift the lever L<sup>3</sup>, and throw back the pressing-piece L clear of the shaft H. The effect of this will be to allow the weighted rock-lever K to act and throw the wheel G into frictional contact with the wheel E. The direction of rotation of the wheel E will thus be reversed, and the sliding frame C will be forced down to its former position. On the completion of the downward traverse of the sliding frame the now headed bolt will be thrown up or out of the die by

means of the sliding plunger *d*<sup>2</sup>, before described, being brought into contact with the fixed pin *e*, standing up from the bed of the press. Simultaneously with this action the arm l<sup>3</sup> will strike upon the stop l' and draw down the lever L<sup>3</sup>, thereby throwing the wheel G out of action. The machine will then be ready to receive and act upon a second bolt-blank, which, by a repetition of the movements above described, will, in like manner to the first bolt-blank, be headed and thrust out of its die by the workman pressing upon the handle l<sup>2</sup>.

Having now described the nature of our invention, and explained the manner of carrying the same into effect, we wish it to be understood that we claim—

1. The sliding frame C, carrying a die, *a*, and receiving reciprocating motion toward and from the fixed die by means of a screw carrying a friction-wheel, which is driven alternately in opposite directions by friction-wheels on a sliding rotary shaft, which is moved endwise by levers operated by a tappet worked by the sliding frame C, all as set forth.

2. In combination with the sliding frame C, carrying the die *a*, a plunger, *d*<sup>2</sup>, and a fixed pin, *e*, for discharging the forged article from the lower die, substantially in the manner and for the purpose above described.

3. The arrangement of elastic washers *f f'*, carried by the pin *e*, which is itself supported on the bed of the press by a cross-pin, *e'*, for yielding or giving way to any undue downward pressure of the sliding frame C.

Dated the 24th day of April, 1876.

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